

TNI	Železnice Aerodynamika Časť 7: Základy pre skúšobné postupy pre odletujúci štrk od vlakov	TNI CEN/TR 14067-7 28 0340
------------	--	--

Railway applications - Aerodynamics - Part 7: Fundamentals for test procedures for train-induced ballast projection

Táto technická normalizačná informácia obsahuje anglickú verziu CEN/TR 14067-7:2021.
This Technical standard information includes the English version of CEN/TR 14067-7:2021.

Táto technická normalizačná informácia bola oznámená vo Vestníku ÚNMS SR č. 09/21

133536

TECHNICAL REPORT

CEN/TR 14067-7

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

April 2021

ICS 45.060.01

English Version

Railway applications - Aerodynamics - Part 7: Fundamentals for test procedures for train-induced ballast projection

Applications ferroviaires - Aérodynamique - Principes
généraux pour des procédures d'essais vis-à-vis des
projections de ballast générées par la circulation des
trains

Bahnanwendungen - Aerodynamik - Grundlagen für
Prüfverfahren für zuginduzierten Schotterflug

This Technical Report was approved by CEN on 19 April 2021. It has been drawn up by the Technical Committee CEN/TC 256.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Symbols and abbreviations	4
5 General aspects of ballast projection and state of the art	4
5.1 Introduction	4
5.2 Summary of studies and incidents (by countries, manufacturers)	5
5.3 Overview of ballasted track systems in Europe	9
5.4 Ice accumulation induced ballast projection	15
6 Economic judgement of damage	18
6.1 Cost of reported damage	18
6.2 Cost of homologation, measures to rolling stock and infrastructure	22
6.3 Cost benefit analysis	26
7 Homologation concepts	27
7.1 General	27
7.2 Existing technical approaches	27
7.3 Responsibilities, interests and intended interface definitions	28
7.4 Conceptual approaches	29
8 Comparison of existing methods	32
8.1 France	32
8.2 Spain	36
8.3 Italy	46
8.4 Belgium	47
8.5 Other countries	47
8.6 Comparison of existing methods	48
8.7 Conclusion drawn from French and Spanish assessments	48
9 Available background	48
10 Conclusion and next steps	49
Annex A (informative) Summary comparison of existing methods addressing ballast projection	51
Annex B (informative) Review of ballast projection papers	56
Bibliography	103

European foreword

This document (CEN/TR 14067-7:2021) has been prepared by Technical Committee CEN/TC 256 “Railway Applications”, the secretariat of which is held by DIN.

CEN/TR 14067-7:2021 (E)**1 Scope**

This document discusses:

- economic aspects of ballast projection;
- comparison of methods in France and Spain for rolling stock;
- infrastructure assessment methods;
- review of available literature;
- next steps and recommendations regarding standardization and research.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14067-4:2013+A1:2018, *Railway applications - Aerodynamics - Part 4: Requirements and test procedures for aerodynamics on open track*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN